

PRACTICAL ASPECTS OF MAINTAINING NEW PLANTS IN QUARANTINE

B.K. POWELL

Duncan & Davies, Ltd.
New Plymouth

In these days of escalating costs, importing plant material can be an expensive undertaking. The overseas price of the plants may still not be high, but the additional charges soon mount up — the largest being for air freight, and this factor may have some bearing on the size and type of material ordered.

During the years I have been dealing with imported plants at Duncan & Davies, I have come to the conclusion that one just cannot make any rules about their treatment, as no two consignments are ever identical, and there are so many factors over which the importer has no control. At times parcels have been delayed as much as three weeks from the date of despatch, and the result can be either dried up leafless sticks, or an evil-smelling compost — according to the materials and methods used in packing. Of the two extremes, I prefer plants to arrive too dry — if they have already decayed, nothing can be done, but very dry material will often recover if soaked in water for several hours and then put under mist.

New plant material can be imported in several forms — the easiest (and lightest from the freight point of view) being deciduous scions or budwood. If coming from the Northern Hemisphere, this can be stored in a refrigerator until the right season comes round, when it is budded or grafted in the usual way.

Unrooted cuttings are the easiest way of importing many evergreens, and are my choice when it comes to rhododendrons and azaleas. We have had no problems with rhododendrons from America — most rooted 100%, though they took twice as long as cuttings from the nursery, because the wood was harder, having been collected in autumn instead of spring or early summer.

No special preparation needs to be made for the arrival of unrooted cuttings, except to have trays of propagation medium ready and suitable space available on bottom heat under mist — it also saves time if record cards are made out and permanent labels written in advance. Taking as an example — we may have 10 cuttings each of 15 or 20 rhododendron cultivars, packed in polythene bags. With luck, they arrive with just enough moisture in the bags to keep the cuttings firm, but not so damp that they are beginning to decay. I open each bag, check the cultivar and number of cuttings sent; if they are at all dry, I dip them in water before laying them in a plastic tray — with the permanent label, and then put the tray into a polythene bag. I like to open and check all the bags

before making any of the cuttings, as, at times, it is not possible to deal with the whole consignment on the day of arrival, and it usually seems to happen that the cultivar which suffered most on the journey, is the last one to receive attention, and the extra time may make quite a difference to its chances of survival.

From that point on, the treatment is the same as for ordinary cuttings taken on the nursery, though it may be necessary to use a stronger hormone as the wood suitable to stand the journey is usually firmer than we should take from our stock plants.

If rooted cuttings are imported, the best results seem to come from those which have been potted for long enough to have made a little new growth. Losses are much heavier in recently rooted cuttings lifted from the propagating beds, washed out and packed. With this type of cutting the roots are often white and fleshy, and tend to break off at the callus, whereas older roots are more flexible. At first glance, many plants and rooted cuttings may appear to have a lot of healthy roots when they arrive, but closer inspection shows that these have been so fractured and mangled in the washing and packing, that they are unlikely to grow. This applies to such subjects as azaleas, rhododendrons and leptospermums, and I think it is better to reduce the root system before heeling them in trays of propagation mix under mist. If this is not done, the new roots have to force their way through a tangle of dead roots before reaching the propagation material.

More difficult to deal with are the larger plants, because the damaged root systems are unable to support the tops; the main problem here is to hold the foliage until new roots are formed to take over. I usually pot the plants up individually in containers of propagation mix — this allows each one to be checked for root movement without disturbing the other plants or causing damage to newly formed roots.

In a glasshouse designed for normal mist propagation, it can be a problem to find a position over bottom heat, with the mist lines high enough to cover tall plants — this needs to be arranged before the consignment arrives, though inevitably, one gets caught sometimes when a much larger grade is sent than was expected!

When scions in leaf are ordered it is essential to have suitable understocks established in containers, but from there on the treatment depends upon the facilities available, the time of year, the source of the scions — whether from Northern or Southern Hemisphere, and the type of graft you intend to use. If delivery can be arranged to coincide with the beginning of root action in the stocks, the results are usually better than if the scions arrive in early winter, when the stocks will not be starting activity for several months. Putting stocks into the glasshouse to encourage root movement can backfire, because the warmth may cause the scion

to make top growth before it has "taken". A side graft on a large stock causes problems too, as it is difficult to cover the scion to prevent loss of moisture, and putting a large polythene bag over stock and scion needs careful watching if damage to parts of the stock caused by the unusually high humidity in the bag is not to spread to the scion. Grafts on smaller stocks — especially cleft grafts, are more easily dealt with, as they can be put into a closed frame for several weeks and gradually given air to harden them off.

Some plants which I should class as 'awkward customers' from an importers point of view, are garryas, grevilleas, neriums and some of the ceanothus. These will not tolerate root disturbance, and the tops suffer from being enclosed for a week or more; they usually arrive having dropped most of their leaves, or with the foliage partly decayed. In a number of other cases, the roots OR foliage do not tolerate the treatment and packing, but when both tops AND roots are affected, the chances of survival are greatly reduced. In some cases it is necessary to make a cutting of the least damaged part of the plant, in the hope of saving something from the wreck.

The fact that a particular plant may have been difficult to establish when first imported, does not necessarily mean that it is not suited to our climate, or that it has a poor constitution. If one or two plants can be grown to the point where a few cuttings can be taken at the right season, then the results may tell a very different story. I find these "difficult" plants much more interesting to deal with than those which arrive in good condition, root up rapidly and never "look back". Now that we are allowed to take cuttings while the plants are in quarantine, the easy ones may have been increased ten-fold by the end of the twelve month period, whereas with the "awkward" types, one may be lucky to end up with two out of an original ten plants!

Deciduous plants from the Southern Hemisphere present no problems, as they come into growth normally in our spring, though it is sometimes wise to protect them from too much rain during the winter months, until the roots are moving. Deciduous plants from the Northern Hemisphere usually arrive in mid-summer, after having had a dormant period of only two or three months. Within two weeks of their arrival they are in full leaf — in fact many buds are already showing signs of movement when the parcels are unpacked. Arriving in our midsummer, nothing can be done to prevent this top growth — which is often well ahead of any root growth, and all one can do is to minimize the effects of flagging in hot weather. I pot the plants into individual containers, using a light soil mix, and stand them in a shade area with additional scrim shading for the first few weeks. The new growth must be protected from wind, and needs frequent overhead

spraying to prevent flagging. I have not, so far, tried putting them under an outside mist line, as I feel the soil in the containers would become sodden and likely to cause decay of damaged roots. Most plants which arrive in a reasonable condition respond to this treatment, and after a short summer, adjust to our seasons, and come into leaf normally the following spring. One exception to this has been some of the *Viburnum* cultivars, which came into leaf late in the summer, with the leaves remaining until mid-winter; the leaves finally dropped, the plants, remaining leafless until the next spring — although the wood was still green and the roots were healthy. After the second spring, they adjusted to our seasons and gave no more trouble.

I have not mentioned conifers, because, as they are held in quarantine at the Plant Diseases Division in Auckland, the problem of establishing them falls to P.D.D., who then hold the plants for up to two years before releasing cutting material or rooted cuttings to the importer. The plants received vary in size from very small rooted cuttings to large plants in six inch pots, according to ease of propagation and speed of growth. Once the importer has stock plants established, the originals are destroyed by P.D.D.

Another point which I think is important is that the quarantine plants should be in a position where any slight change in foliage colour or sign of flagging will be noticed. If the plants are tucked away in a corner, such warning signs may be missed, until it is too late to take any action. Sometimes one plant in a batch will suddenly collapse, and examination shows that the roots are quite dead — in fact, everything below ground level has decayed. Because of the warm, moist conditions in the glasshouse, the tops of the other plants may appear to be quite healthy, but upon shaking them free of the potting medium, they may also be found to have decayed. Prompt action at this point may save at least some portions of the plants, so that the cultivar will not be lost. Some parts may be suitable for cuttings, or perhaps grafting, if stocks are available. Sometimes the trouble is not so serious, and all that is required is a little additional shading — or a good soaking.

As I said earlier, much of the success with imported plants depends upon their condition when received — and that is what makes the opening of each parcel so interesting. It may be good policy to deal, as far as possible, with firms which are used to packing for overseas; some small firms don't seem to have a clue when it comes to exporting plants. We have had parcels which arrived limp and flat, with the contents squashed and useless — on the other hand, some have been packed in such sturdy containers, that the air freight amounted to three times the cost of the contents!

Specialist growers will have evolved their own methods of dealing with their particular lines, but as Duncan & Davies are in-

terested in such a wide range of material — from unrooted Erica cuttings an inch long, to grafted plants of named macadamias over three feet tall, there can be no rules for treatment and each consignment must be dealt with according to its requirements. Success in getting the plants through the first few weeks of the quarantine period is a combination of common sense, instinct, and quite a bit of luck!

GRAFTING MAPLES FROM IMPORTED SCIONS

B.A. RAPLEY

Mangamahoe Nurseries, New Plymouth

Preparation. A suitable number of stocks of each cultivar are potted into large propagating tubes and left in a shadehouse to grow on as normal. This was done in mid-winter. A cold frame measuring approximately 4 ft. x 4 ft. and 2 ft. high at the back, falling to 18" in front, was built of 0.005 grade white plastic film and 2" x 2" battens. This was sited in a sheltered area with overhanging trees providing a moderate amount of dappled shade. This frame had a roll top with sufficient overhang so that it could be battened down at the sides so as to be made reasonably airtight. A layer of sawdust about 6" deep was laid in the bottom of the frame.

Grafting. During late spring in 1971 (the first week of November) a consignment of scions arrived from Hilliers in England and these were grafted immediately. By this time the stock plants had put on a lot of new growth, and a large number had to be cut back at the time of grafting — mainly to conserve space. For the *Acer negundo* and *A. palmatum* cultivars the side graft was used, but as some of the *A. pseudo-platanus* stocks and scions were quite thick, a few were done using the cleft graft. The grafts were tied with raffia, but no wax or grease was used. The grafted plants were then plunged into the sawdust, completely covering the grafted area. The top of the frame was then rolled down and battened in place.

Treatment. The frame was opened for the first time after four weeks. By this time the majority of the grafts were showing definite signs of growth, and those which had obviously failed were taken out and destroyed. The remainder were then sprayed with a fungicide to prevent the spread of fungus and mildew. During the next two months, the grafts were gradually hardened off by leaving the frame open for longer periods. They were also watered quite heavily during this time.